

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :

James Thomas COOK & Thomas Clay CROFT :

Serial No.: Not assigned : Group Art Unit: Not assigned

Filed: December 31, 2001 : Examiner: Not assigned

For: IMPROVED HOSE STRUCTURE, FORMULATION FOR A RUBBER TUBE USED  
THEREIN AND METHOD OF MAKING THE HOSE STRUCTURE

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, DC 20231

Sir:

Prior to initial examination, please amend the above-identified application as follows:

**IN THE SPECIFICATION:**

Please amend the specification as follows:

**On page 1, the first paragraph has been amended as follows:**

The present invention is directed to an improved hose structure; formulations for a rubber tube used therein, and method of making the hose structure. More particularly, the present invention is directed to a rubber formulation utilizing chlorinated polyethylene (CPE) for making a tubular portion of a hose and to a method of making a hose using that tubular portion.

On page 5, the first full paragraph has been amended as follows:

Component	Description	Parts by Weight
Polymer	CPE	90 - 100
Plasticizer	Blend of polymeric and ester based component, e.g.	35 - 55
	(Dioctyl Adipate)	(10 - 30)
	(Epoxidized soyabean oil)	(10 - 30)
Reinforcing Agent	Carbon black	100 - 150
Heat Stabilizer	Magnesium Oxide, Lead Silicate	5 - 20
Antidegradants	2, 2, 4-Trimethyl-1, 2-dihydroquinoline 6-ethoxy-1, 2-dihydro-2, 2, 4-trimethylquinoline	0.5 - 3
Process Aids	Stearic Acid, Polyethylene (low molecular weight)	0.5 - 2
Vulcanizing Agents	Blend of peroxide and cross-linking coagents, e.g.	(2-5)
	(Dicumyl peroxide)	(2 - 1 0)
	(1,1 - bis (t-butylperoxy),	(2-5)
	(3,3,5 - trimethyl cyclohexame), (Triallyl Trimellitate)	(2 - 5)

The paragraph bridging pages 5 and 6 has been amended as follows:

The resulting rubber compound is mixed using an internal mixer as a temperature which rises from room temperature to about 250°F and is held at the

250°F level for about one minute. In the mixer, the ingredients are sheared until they reach a homogeneous state. The mixed ingredients are then dumped from the mixer, quickly cooled and stored for making the hose 10.

**On page 6, the second full paragraph has been amended as follows:**

Referring now to Fig. 2 where the method of making the hose is illustrated, the mixed ingredients 30 fill an extruder 32 and are extruded onto a thermal plastic mandrel, e.g. NYLON® that forms the desired inside diameter 13. The distance between the inside diameter 13 and the outside surface 15 provides the wall thickness of the finished tube 12. The extruder 32 has an output speed of 15 to 50 feet per minute and a temperature which is maintained in the range of 150 – 180°F. After being extruded, the tube 12 is passed through a freezer 36 that gives dimensional stability to the tube prior to the wire reinforcement 14 being applied by a braider 42. Preferably, the braiding wire 14 is either stainless steel wire or brass plated steel wire. The tube 12 with the reinforcing layer 14 thereover is then passed through a rubber strip unwind unit which lays the adhesive backing layer 18 over the wire reinforcing layer 14. The backing layer 18 is preferable of rubber and provides an adhesive layer between the wire layer 14 and the subsequent layer of yarn braid 20. The yarn braid 20 is applied by a yarn braider 50 which dispenses strands 52 of yarn. Subsequent to the strands 52 of yarn forming the yarn braided layer 20, the coating 22 having a polyurethane base is applied by a coater 53 over the braided yarn layer 20.

114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
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114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200

**REMARKS**

The foregoing amendments have been filed to replace initialed and dated handwritten corrections to the specification with corresponding typed inserts.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

  
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**Date: December 31, 2001**

## VERSION WITH MARKINGS TO SHOW CHANGES MADE

### In The Specification:

On page 1, the first paragraph has been amended as follows:

The present invention is directed to an improved hose structure; formulations for a rubber tube used therein, and method of making the hose structure. More particularly, the present invention is directed to a rubber formulation utilizing polyvinyl chloride chlorinated polyethylene (CPE) for making a tubular portion of a hose and to a method of making a hose using that tubular portion.

On page 5, the first full paragraph has been amended as follows:

Component	Description	Parts by Weight
Polymer	CPE	90 - 100
Plasticizer	Blend of polymeric and ester based component, e.g.	35 - 55
	(Diocetyl Addipate <u>Adipate</u> )	(10 - 30)
	(Epoxidized soyabean oil)	(10 - 30)
Reinforcing Agent	Carbon black	100 - 150
Heat Stabilizer	Blend of metal oxides and silicates	5 - 20
	<u>Magnesium Oxide.</u> <u>Lead Silicate</u>	

Antidegradants	Blend of quinoline types <u>2, 2, 4-Trimethyl-1, 2-dihydroquinoline</u> <u>6-ethoxy-1, 2-dihydro-2, 2, 4-trimethylquinoline</u>	0.5 – 3
Process Aids	Blend of low molecular weight waxes <u>Stearic Acid</u> <u>Polyethylene (low molecular weight)</u>	0.5 – 2
Vulcanizing Agents	Blend of peroxide and cross-linking coagents, e.g.  (Dicumyl peroxide)  (1,1 – bis (t-butylperoxy),  (3,3,5 – trimethyl cyclohexane),  (Triallyl Trimellitate)	(2-5)  (2 – 1 0)  (2-5)  (2 – 5)

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The resulting rubber compound is mixed using an internal mixer as a temperature which rises from room temperature to about 250°F and is held at the 250°F level for about one minute. In the mixer, the ingredients are ~~sheered~~ sheared until they reach a homogeneous state. The mixed ingredients are then dumped from the mixer, quickly cooled and stored for making the hose 10.

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Referring now to Fig. 2 where the method of making the hose is illustrated, the mixed ingredients 30 fill an extruder 32 and are extruded onto a thermal plastic mandrel, e.g. NYLON® that forms the desired inside diameter 13. The distance between the inside

diameter 13 and the outside surface 15 provides the wall thickness of the finished tube 12.

The extruder 32 has an output speed of 15 to 50 feet per minute and a temperature which is maintained in the range of 150 – 180°F. After being extruded, the tube 12 is passed through a freezer 36 that gives dimensional stability to the tube prior to the wire reinforcement 14 being applied by a braider 42. Preferably, the braiding wire 14 is either stainless steel wire or brass plated steel wire. The tube 12 with the reinforcing layer 14 thereover is then passed through a rubber strip unwind unit ~~second extruder~~ 44 which lays the adhesive backing layer 18 over the wire reinforcing layer 14. The backing layer 18 is preferable of rubber and provides an adhesive layer between the wire layer 14 and the subsequent layer of yarn braid 20. The yarn braid 20 is applied by a yarn braider 50 which dispenses strands 52 of yarn. Subsequent to the strands 52 of yarn forming the yarn braided layer 20, the coating 22 having a polyurethane base is applied by a coater 53 over the braided yarn layer 20.

**On page 7, the first full paragraph has been amended as follows:**

The hose 10 or 10' is then vulcanized by a vulcanizer 62 in steam, at approximately 300°F for a period in the range of 60 – 80 120 minutes. Thereafter, the hose 10 is placed in a water shower 64.